

ing; ocelli black, mouth faintly brown; width 1 mm. Body green; dorsal line straight, white, crinkly edged; tubercles i and ii white; subdorsal line straight, narrow, white; tubercles iii and iv less distinctly white; substigmatal line distinct white, moderately broad, somewhat shaded below, just covering spiracles. Feet green, those of 7 and 8 smaller than the others. Tubercle iv opposite lower edge of spiracle.

Stage IV. Head 1.8 mm. All pale green, joint 12 a little enlarged; feet nearly equal. Lines and tubercles white, dorsal and subdorsal lines narrow, rather pulverulent; stigmatal moderate, enclosing the spiracles except on joints 2 and 12, a dark green shade above it reaching to tubercle iii. Feet green, shields and plate uncornified, obscure. Tubercles minutely black in white rings; iv at the lower edge of spiracle; setae rather long, fine, dusky. Spiracle white, finely black rimmed.

Stage V. Head green, ocelli narrowly black centrally, labrum white; width 2.7 mm. Green, plates invisible; skin finely white dotted, lines white; dorsal line distinct, obsolete at the ends; subdorsal narrow, faint, half as wide as the dorsal; stigmatal narrow, about the width of the spiracles which it half encloses except on joints 2 and 12, covering tubercle iv; a dark green shade above, diffuse,

tainter at the spiracles. Subventer white dotted; feet clear green, equal. Body slender, joint 12 slightly enlarged. Tubercles and spiracles white, the latter ringed.

Stage VI. Head pale brown, shining, reticulate with darker brown, shaded in clypeus and at base of antennae; labrum whitish; ocelli pale; width 4.6 mm. Body cylindrical, joint 12 a little enlarged on top; feet equal. Light yellow-brown; dorsal and subdorsal lines narrow, pulverulent and broken, brownish white, bordered with darker brown; oblique subdorsal shades brown, running between tubercles i and ii forward and outward; skin mottled, dotted with whitish; substigmatal line moderately broad, whitish on the edges, centrally of the color of the body, the lower edge finally fading out, leaving a very narrow pale line cutting the spiracles. Feet pale; setae white; cervical shield and anal plate not cornified, not lined. Spiracles white, black ringed. Later the larvae fade to a pale greenish brown, the lines becoming faint and the head appearing dark by contrast. Setae single, normal, iv opposite lower edge of spiracle.

The larvae hatched early in May and entered the earth in June. They fed on various leaves, but seemed to prefer willow, on which they throve. The imagoes appeared in August.

FOUR NEW SPECIES BELONGING TO THE GENUS *PLENO-* *CULUS* FOX.

BY WILLIAM H. ASHMEAD, WASHINGTON, D. C.

The genus *Plenoculus* Fox was erected in *Psyche*, Vol. VI, 1893, p. 554, with one species *P. davisi*. Since that time, however, four additional species have been described, three by Fox and one by myself. I have now the pleasure of presenting descriptions of four new species and giving a table for distinguishing all of the species.

The genus is unknown outside of boreal, North America.

Table of Species.

Clypeus anteriorly not emarginate medially 2

Clypeus anteriorly emarginate, or excised medially, dentate or denticulate laterally.

Five teeth on each side of the median emargination; abdomen black, the apical margin of segments more or less testaceous; mandibles except tips and the tibiae and tarsi more or less pale ferruginous; the tibiae blackish beneath; first joint of flagellum slightly shorter than the second. ♀.

(1) *P. davisii* Fox.

Two teeth on each side of the median emargination; abdomen black or more or less rufous on basal three segments, in the latter case the second ventral segment always with an oblong black spot on each side, the ventral segments 3-5 also more or less dusky basally; mandibles pale ferruginous with black tips; anterior tibiae, except behind, and the anterior and middle tarsi ferruginous; first joint of flagellum as long as the second. ♀.

(2) *P. propinquus* Fox.

2. Clypeus anteriorly triangularly produced medially 5

Clypeus anteriorly slightly rounded or subsemicircularly produced 3

Clypeus anteriorly truncate medially.

Anterior margin of clypeus broadly squarely truncate with a delicate raised margin, without lateral teeth; abdomen mostly rufous, blackish towards apex; head thorax and abdomen closely and rather strongly punctate; legs black with the anterior tibiae and tarsi and the mandibles rufous. ♀.

(3). *P. punctatus* n. sp.

Anterior margin of clypeus subtruncate medially; abdomen, except extreme apex which is red, black; the apex of the segments narrowly testaceous; mesonotum and scutellum finely closely punctate; legs, except coxae, rufous. ♀.

(4). *P. parvus* Fox.

3. No lateral tooth on anterior margin of clypeus 4

A lateral tooth on anterior margin of clypeus.

Clypeus, mandibles, except tips, the anterior femora beneath, and all tibiae and

tarsi, yellowish; the middle and hind tibiae have a dusky blotch within toward apex; abdomen entirely black. ♂.

(2) *P. propinquus* Fox.

Clypeus, mandibles and palpi, pale yellowish; the anterior femora with a large white spot beneath at apical three fourths; all tibiae and tarsi pale yellowish, the tibiae more or less brown or black within or beneath; abdomen rufous. ♂.

(5) *P. abdominalis* n. sp.

4. Head and thorax black; abdomen rufous; anterior and middle femora beneath with a large white spot at apex, the hind tibiae and tarsi yellowish. ♀.

(6) *P. cockerellii* Fox.

Wholly black, the hind tibial spurs white; abdomen finely, minutely punctate, with some silvery pubescence, especially at apex of segments and laterally; first joint of flagellum distinctly shorter than the second; face with silvery pubescence. ♀.

(7) *P. niger* n. sp.

5. Black, the head and thorax closely, distinctly punctate, mandibles piceous towards tips; hind tibial spurs whitish; tarsi brownish; abdomen shining but still finely punctate. ♂.

(8) *P. peckhami* Ashm.

Black, the mandibles except tips, the superior margin of pronotum, interrupted at the middle hind margin of tubercles, tegulae, postscutellum, the apical three fourths of the front femora, the apex of middle femora and all tibiae and tarsi white, but the tibiae beneath are black. ♂.

(9) *P. albipes* n. sp.

(3) *Plenoculus punctatus* n. sp. ♀. Length 5.5 to 6 mm. Head and thorax black confluent punctate. Clypeus squarely truncate anteriorly with a delicate but distinct raised rim, minutely punctate, smoother anteriorly and with several large scattered punctures. Palpi and mandibles rufous or ferruginous, the tips of the latter black. Antennae black, the flagellum rather stout, gradually incrassated towards apex, the scape with a rufopiceous spot beneath towards apex. Legs black with the anterior tibiae and tarsi rufous

or ferruginous. Wings hyaline or subhyaline, the stigma and veins black or piceous black, the second recurrent nervure interstitial with the second transverse cubitus; tegulae black punctate. Abdomen distinctly punctate, rufous, the apical segments 4-6 more or less blackish; pygidium distinctly punctate, the lateral carinae, forming the pygidial area, somewhat produced at apex so as to make the tip of the abdomen appear tridentate.

Hab.—Colorado. Carl F. Baker Collection, No. 1546.

Type, No. 5066, U. S. N. M.

(5) *Plenoculus abdominalis* n. sp. ♂.—Length 2.65 mm. Head and thorax black, very finely, closely, microscopically punctate and more or less clothed with a silvery pubescence, especially on the face and the mesopleura. Clypeus, mandibles and palpi pale yellowish, the former impunctate, with a slight tooth on each side. Antennae dark rufous, the flagellum blackish above towards the base. Legs black, the anterior femora with a white spot at apical third beneath, all tibiae and tarsi pale yellowish, the tibiae more or less brown or even black beneath or within. Wings hyaline, tegulae white; stigma and veins pale brown, the second recurrent nervure joining the petiolated second submarginal cell near its apex before the second transverse cubitus. Abdomen wholly rufous, subopaque, but not punctate.

Hab.—Arizona. Carl F. Baker Collection, No. 2123.

Type, No. 5067, U. S. N. M.

(7) *Plenoculus niger* n. sp. ♀.—Length 4.6 mm. Wholly black, closely punctate, the head distinctly punctate, the face clothed with a silvery pubescence; there is also a distinct silvery pubescence on the pleura and also more or less on the abdomen but

not so dense or decided as on the face. Clypeus subsemicircularly produced medially, without a lateral tooth. Mandibles black rufous toward tips. Palpi brownish. Metathorax coarsely sculptured with oblique and transverse striations. Wings subhyaline, the tegulae, stigma and veins brown-black; the first recurrent nervure is interstitial or almost with the first transverse cubitus, while the second recurrent joins the second submarginal cell between its middle and apex. Abdomen very finely but distinctly punctate, the pygidium smooth, the lateral carinae very delicate.

Hab.—Colorado. Carl F. Baker Collection No. 2170.

Type, No. 5068, U. S. N. M.

(9) *Plenoculus albipes* n. sp. ♂.—Length 3 mm. Black, the head closely, finely punctate, opaque, the face with a dense silvery pile; mandibles except tips, superior margin of pronotum interrupted medially, hind margins of tubercles, tegulae, postscutellum, apical three-fourths of front femora *beneath*, apex of middle femora and all tibiae, except beneath, and the tarsi white. Mesonotum shining but finely punctate; metathorax finely rugulose, the meso- and meta-thorax clothed with a silvery pubescence. Wings hyaline, the stigma and veins brown, the first recurrent nervure uniting with the cubitus before the first transverse cubitus, the second recurrent joining the second submarginal cell *beyond* its middle. Abdomen subcoriaceous, with a silvery pubescence at apex of segments and more or less laterally. Terminal joint of antennae very large, ovate in outline but subcompressed.

Hab.—Colorado. Carl F. Baker Collection, No. 2358.

Type, No. 5069, U. S. N. M.

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